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Adv DevOps Assignment 1 (04/05)

Q1. Use S3 bucket for Video Streaming Hosting.

Ans We are supposed to follow the below mentioned steps for using an S3 bucket for video streaming hosting.

① Create an S3 bucket:

→ Log in into your AWS management console and navigate to the S3 service

→ Create a new bucket, ensuring that the bucket name is unique globally. Choose an appropriate region where you want to store your videos.

② Upload your files:

→ Upload your video files to the S3 bucket. You can do this via the AWS Console or using AWS CLI. Ensure the files are in a format suitable for streaming (eg. MP4).

③ Set Permissions.

→ Configure the bucket's permissions to allow public access (or restricted access depending on your needs). This can be done using S3 bucket policies (Access Control Lists) to ensure that users can view the video files.

→ You may want to restrict access based on time-limited URLs if you're dealing with sensitive content.

④ Enable static Website hosting

→ In the S3 bucket settings, enable "Static Website hosting". This allows you to serve content directly via HTTP. The S3 bucket will then act as a web server for your video content.

→ Provide the index document and error document fields

even if you are just streaming video.

~~(5) Use dash.js~~

(5) Video player integration:
→ Use a video player (like HTML5 video player or third-party libraries such as video.js) that can read the video file from the S3 URL and stream it to the user's browser or application.

(6) Optimize for Streaming:
→ For larger video files or continuous streaming, consider converting your video into smaller chunks using HLS (HTTP Live Streaming) or DASH (Dynamic Adaptive Streaming over HTTP) protocols. These chunks can also be stored in the S3 bucket and streamed via the video player.

Q2. Discuss BMW and Hot Star case studies using AWS.

Ans BMW case study using AWS: BMW leverages AWS to enhance its autonomous driving, connected car services, and digital transformation initiatives. By utilizing services like Amazon S3 for data storage, EC2 for compute, and SageMaker for machine learning, BMW processes massive amounts of vehicle data in real time, improving performance and safety. AWS IoT services also help BMW maintain millions of connected cars, offering over-the-air updates and predictive maintainence. With AWS's global scalability and advanced security features, BMW ensures low latency services, secure

data handling, and compliance with regional regulations, enhancing user experience through platforms like Connected Drive

Hotstar Case study Using AWS : Hotstar uses AWS to manage massive traffic spikes during like streaming events, such as cricket tournaments. With AWS Auto Scaling and Elastic Load Balancing, Hotstar ensures uninterrupted streaming for millions of current viewers. AWS Elemental Media Services powers Hotstar's high quality video streaming, while Cloud front ensures low-latency content delivery. Hotstar also utilizes AWS analytics services to personalize recommendations and optimize performance, while services like DynamoDB and S3 handle large-scale data needs. AWS's security features protect user data, and its pay-as-you-go model helps Hotstar manage costs effectively.

Q3 Why kubernetes and advantages and disadvantages of kubernetes. Explain how adidas uses kubernetes?

Ans Kubernetes is an open-source container orchestration platform that automates the deployment, scaling and management of containerized applications. It handles tasks like load balancing, self healing, scaling and resource optimization, making it a go-to solution for modern application.

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Its advantages are as follows:
(1) Scalability: Early scales application horizontally and vertically.
(2) High availability. Reschedules failed containers to maintain software.
(3) Resource efficiency: Efficiently utilizes hardware resources. other advantages include portability and automation.

Its disadvantages are as follows:-
(1) Complexity: The steep learning curve due to its extensive features.
(2) Overhead requires more resources to run, which can lead to higher costs for smaller applications.

How adidas uses Kubernetes Adidas adopted k8s:- Kubernetes to manages its microservices-based architecture and improve the agility of its platform. Adidas benefits from Kubernetes ability to scale workloads dynamically during peak traffic periods. Such as product launches or high demand times like holiday seasons. This flexibility allows Adidas to deliver a consistent user experience while monitoring operational efficiency across its e-commerce platforms.

Q4. What are Nagios and explain how Nagios are used in E-services?

Ans Nagios is an open-source monitoring tool that helps track the health and performance of IT infrastructure including servers, applications, services, and networking. It provides real-time alerts on issues like server downtime, network failures or resource exhaustion, allowing administrators to resolve problems before they impact users.

In E-services, Nagios is used to monitor, avail services like payment gateways, website uptime and database availability. It ensures smooth service delivery by detecting issues early and notifying the IT team, thus preventing service disruptions, minimizing downtime, and ensuring a reliable user experience for end users.